

Work Order ID 75626

October-27-11 11:33:31 AM

75626

Page 1

Item ID: D6002-115 Accept ***N9000040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Material
 Start Date: 27/10/2011 Start Qty: 20.00 ***20*** Cust Item ID:
 Required Date: 30/01/2013 Req'd Qty: 20.00 ***20*** Customer:
 Reference:

Approvals: Process Plan: MLJ Date: 11/10/12 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D6002	Rev A

100	PURCHASING	0.00							
100									
Purchasing	Memo	0.00							
Purchasing	Issue P/O <u>15344</u> a) Extrude as per Dwg D6002b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9or QQ-A-200/11) seamless aluminum tubec)Minimum ultimate tensile strength = 77 ksid)Minimum tensile yield strenght=66 ksie)Material certification								

110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110									
Packaging	Memo	0.00							
Packaging	Ensure material certification is attached								

120	QC6- Inspect dimensions to drawing	0.00							
120									
QC	Memo	0.00							
Quality Control	Ensure Material certification comply to Dwg D6002								

D48 16
 17/11/01
 see attach
 ext. report

CY 11/11/03 20
12/11/03 23
(23)
 (cont.)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 75626

October-27-11 11:33:31 AM

75626

Page 2

Item ID: D6002-115 Accept ***N9000040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Material
 Start Date: 27/10/2011 Start Qty: 20.00 ***20*** Cust Item ID:
 Required Date: 30/01/2013 Req'd Qty: 20.00 ***20*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Chemical Conversion Coat per QSI005 4.1	0.00							
130									
HandFinish	Memo	0.00							
Hand Finishing									
140	Identify as per dwg & Stock Location: LG	0.00							
140									
Packaging	Memo	0.00							
Packaging									
150	QC21- Final Inspection - Work Order Release	0.00							
150									
QC	Memo	0.00							
Quality Control									

N/A 12-11-5

1 0
 mm.L
 12/11/05
 12/11/05
 MJS 12-11-05

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



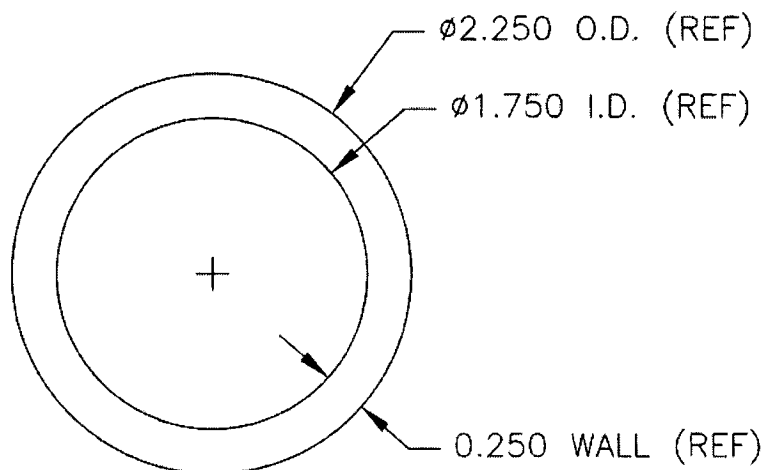
DESIGN <i>CP</i>	DRAWN BY <i>CP</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>A</i>	APPROVED <i>A</i>	DRAWING NO. D6002	REV. A SHEET 1 OF 1
DATE 00.11.22		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	00.11.22	NEW ISSUE	

SPECIFICATION CONTROL DRAWING

RELEASED
00.11.24 *OK*

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT

WITHOUT NOTICE
WORK ORDER
NO. 75626 *M.L.J*
11110127



NOTES

- 1) D6002-XXX CROSSTUBE
 |
 LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 115" LONG TUBE: D6002-115

- 2) MATERIAL: 2.250 OD x 0.250 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:
O.D.: ± 0.006 MEAN (± 0.012 INCLUDING OVALITY)
WALL: ± 0.008 MEAN (± 0.025 INCLUDING ECCENTRICITY)
LENGTH: XXX $+0.125/-0.000$
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

Copyright © 2000 by DART AEROSPACE LTD

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Packinglist ALUnna AG

ALUnna ref. no.	44987/100
Customer PO.	P.O.15344
Date:	10.01.12

Boxmarking:

Dart Aerospace P.O.15344	D6002-115
Made in Germany	
Dest Hawkesbury	ONT Canada

We hereby declare that the wooden packing material are totally free from bark and apparently

free from live plant pests

[illegible]

Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1- DIN EN 10204:2005

Kunde:
Client:

Dart Aerospace Ltd.

1270 Aberdeen Street
K6A1K7 Hawkesbury, ON Canada

Zeugnisnummer: 1216/12
Cert No.: / No. du certificat:

Bestellnummer: PO 15344
Order No. / No. de commande

Auftrag: 44987/100
Our Reference/Notre Reference:

Produkt:

Product / Produit:

Rohre nahtlos gepresst
Tubes seamless extruded

Spezifikation:
Specification:

AMS - QQ - A - 200/11; Spezifikation Dart Aerospace D6001

Werkstoff:
Alloy/Alliage:

7075

Zustand:
Temper/Etat

T 6511

Abmessung
Size / Dimension

2,250 INCH x 1,750 INCH x 0,250 INCH x 115,000 INCH
D6002-115 2.250 X 0.250 X 115

Kennzeichnung
Marking/Marquage:

aluNNA-Cert No.1216/12-7075-T6511-Cast No.7383-AMS-QQ- A- 200/11E-2.250" OD X 0.250"Wall-Heat Lot
No.401222-ALUnna Order Conf No.44987/100-1-P.O.15344

Lieferung

Delivered Material / Matériel délivré:

pcs.

lbs

Country of Manufacture: Germany

23

434

Products are in accordance with applicable RoHS

Elemente ohne Grenzwerte:
einzel max. 0,05 %, insgesamt 0,15 %

1. Chemische Analyse

Chemical Analysis / analyse chimique

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni
Charge/ min.			1,2		2,1	0,18	5,1						
Cast No. max.	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20					
7383/12	0,098	0,188	1,433	0,052	2,419	0,212	5,828	0,039	0,004	0,0312	0,0001	0,0015	0,0003

Hydrogen content: 0,07

ccm/100 g Al Elements without indication < 0,01 %

country of melt manufacturer: Germany

2. Mechanische Eigenschaften

Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat Lot No.
min. max.	77,0	66,0	7,0			
1	81,925	74,240	11,0			401222
		8,24/1,1				

RMS: outside 25 - max. 16,0 µ"

**Ergebnis der
Prüfungen:**

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results:
Resultats:

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order
Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

EXTRUSION INSPECTION SHEET

		SIDE A		SIDE B		ULTRA SONIC MEASUREMENTS							
TUBE #	TOTAL LENGTH	DIA two readings	DIA two readings	INSIDE DIA	wall thickness measured w/vern	Strightness at 12" in middle	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4	
DWG	115.00"	2.250"		1.750"	0.250"	0.010"	N/A	Middle	N/A				
1	115.00"	2.251"/2.249"	2.257"/2.249"	1.726"	0.260"/0.251"	0.002"	N/A	Middle	0.268"	0.263"	0.260"	0.263"	
2	115.00"	2.249"/2.252"	2.249"/2.250"	1.726"	0.258"/0.263"	0.001"	N/A	Middle	0.263"	0.259"	0.260"	0.265"	
3	115.00"	2.245"/2.249"	2.249"/2.250"	1.727"	0.258"/0.263"	0.0015"	N/A	Middle	0.260"	0.262"	0.265"	0.263"	
4	115.00"	2.247"/2.251"	2.249"/2.251"	1.726"	0.257"/0.262"	0.001"	N/A	Middle	0.259"	0.262"	0.267"	0.262"	
5	115.00"	2.248"/2.252"	2.249"/2.252"	1.726"	0.256"/0.261"	0.002"	N/A	Middle	0.262"	0.261"	0.263"	0.264"	
6	115.00"	2.248"/2.250"	2.247"/2.251"	1.724"	0.258"/0.262"	0.001"	N/A	Middle	0.260"	0.264"	0.263"	0.262"	
7	115.00"	2.249"/2.251"	2.249"/2.251"	1.730"	0.256"/0.260"	0.001"	N/A	Middle	0.264"	0.267"	0.257"	0.255"	
8	115.00"	2.250"/2.252"	2.248"/2.250"	1.727"	0.257"/0.262"	0.0015"	N/A	Middle	0.263"	0.262"	0.263"	0.263"	
9	115.00"	2.245"/2.251"	2.246"/2.251"	1.730"	0.256"/0.265"	0.0015"	N/A	Middle	0.263"	0.260"	0.257"	0.258"	
10	115.00"	2.249"/2.250"	2.249"/2.250"	1.726"	0.258"/0.264"	0.004"	N/A	Middle	0.264"	0.263"	0.264"	0.260"	
11							N/A	Middle					
12							N/A	Middle					
13							N/A	Middle					
14							N/A	Middle					
15							N/A	Middle					
PART # D6002-115		P/O# 15344			BATCH # B75626			Notes:					